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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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TITLE: ORGANIC FUNCTIONAL ELEMENT AND METHOD FOR
MANUFACTURING SAME

AMENDED CLAIMS

1. (currently amended) An organic functional element comprising at least a plurality of electrodes and an organic material layer, ~~characterized in that~~ wherein at least one of the electrodes is composed of a metal having a melting point not higher than a temperature that is higher by 30°C than a glass transition temperature of the organic material layer.
2. (currently amended) An organic functional element comprising at least a plurality of electrodes and an organic material layer, ~~characterized in that~~ wherein at least one of the electrodes is composed of a metal having a melting point of 70°C or higher that is higher by 30°C than a glass transition temperature of the organic material layer.
3. (currently amended) An organic functional element comprising at least a plurality of electrodes and an organic material layer, ~~characterized in that~~ wherein at least one of the electrodes is composed of a metal having a melting point of 70°C or higher to 160°C or lower.

4. (currently amended) The organic functional element according to ~~any one of claims 1 to 3~~ claim 1, ~~characterized in that~~ wherein the metal constituting the electrode is an alloy of Bi and at least one kind of other metals.

5. (currently amended) The organic functional element according to ~~any one of claims 1 to 4~~ claim 1, ~~characterized in that~~ wherein a Bi component in the metal constituting the electrode is greater than that of at least one kind of other metals.

6. (currently amended) The organic functional element according to ~~any one of claims 1 to 5~~ claim 1, ~~characterized in that~~ wherein the metal constituting the electrode is an alloy composed of Bi and one, two, three, four or five kinds of metals selected from a group composed of Sn, Pb, Cd, Sb and In.

7. (currently amended) The organic functional element according to ~~any one of claims 1 to 4~~ claim 1, ~~characterized in that~~ wherein the metal constituting the electrode is an alloy of Sn and Bi, and a Sn component is greater than a Bi component.

8. (currently amended) The organic functional element according to ~~any one of claims 1 to 3~~ claim 1, ~~characterized in that~~ wherein the metal constituting the electrode is an alloy of In and Sn.

9. (currently amended) An organic functional element composed of at least a plurality of electrodes and an organic materials layer, ~~characterized in that~~ wherein at least one of the electrodes is composed of a metal containing an alkali metal or an alkaline earth metal, and a melting point of the metal is 200°C or lower.

10. (currently amended) The organic functional element according to claim 9, ~~characterized in that~~ wherein the metal constituting the electrode is an alloy composed of Bi and at least one kind of other metals, a Bi component is greater than that of the at least one kind of other metals, and containing both: one, two, three, four, five or six kinds of metals selected from a group composed of Sn, Pb, Cd, Sb, In and Ag; and at least one kind of the alkali metal or the alkaline earth metal.

11. (currently amended) The organic functional element according to claim 9, ~~characterized in that~~ wherein the metal constituting the electrode is an alloy of Sn and Bi, wherein a Sn component is greater than a Bi component and contains at least one kind of the alkali metal or the alkaline earth metal.

12. (currently amended) The organic functional element according to claim 9, ~~characterized in that~~ wherein the metal constituting the electrode is an alloy of In and Sn and contains at least one kind of the alkali metal or the alkaline earth metal.

13. (currently amended) The organic functional element according to ~~any one of claims 9 to 12~~ claim 9, ~~characterized in that~~ wherein one kind of the alkali metal or the alkaline earth metal is 0.01 to 1% by volume, preferably 0.05 to 0.5% by volume.

14. (currently amended) The organic functional element according to ~~any one of claims 9 to 12~~ claim 9, ~~characterized in that~~ wherein one kind of the alkali metal

or the alkaline earth metal is 0.01 to 1% by weight, preferably 0.05 to 0.5% by weight.

15. (currently amended) The organic functional element according to ~~any one of claims 9 to 14~~ claim 9, ~~characterized in that~~ wherein the alkali metal or the alkaline earth metal is selected from a group composed of Ca, Li, Cs, Mg and Sr.

16. (currently amended) The organic functional element according to ~~any one of claims 1 to 15~~ claim 1, ~~characterized in that~~ wherein a gap made between the organic material layer and a base material having a concave part opposite to the organic material layer is filled and formed with the metal.

17. (currently amended) The organic functional element according to claim 16, ~~characterized in that~~ wherein the gap has one or more opening parts, and the opening parts are sealed with a hardened metal.

18. (currently amended) A method for manufacturing the organic functional element of ~~any one of claims 1 to 15~~ claim 1, ~~characterized in~~ which comprises coating the organic material layer with a particle paste of the metal constituting the at least one of the electrodes, melting and cooling the particle paste to form the electrode.

19. (currently amended) The method for manufacturing the organic functional element of ~~any one of claims 1 to 16~~ claim 1, ~~characterized in that the~~ wherein a base material having a concave part in which the metal constituting the at least one of the electrodes is melted and maintained is opposed to, and pressed against, a substrate having the organic material layer formed thereon, such that

the organic material layer is contacted with the metal, followed by transferring the metal to the organic material layer and cooling it to form the electrode.

20. (currently amended) The method for manufacturing the organic functional element of ~~any one of claims 1 to 17~~ claim 1, ~~characterized in that the~~ wherein a gap provided with one or more opening parts is made between the organic material layer and a base material having a concave part opposite to the organic material layer, and the metal constituting the at least one of the electrodes is melted, injected through the opening part into the gap and cooled to form the electrode.

21. (currently amended) The method for manufacturing the organic functional element according to claim 20, ~~characterized in that~~ wherein a vacuum injection method composed of arranging the metal in the opening part, evacuating the gap and its surrounding predetermined space, and opening the surrounding space onto air in this order is carried out to inject the metal into the gap and thereby forming the electrode.

22. (currently amended) The method for manufacturing the organic functional element according to claim 20, ~~characterized in that~~ wherein an arrangement of the metal in the opening part and a suction of a gas in the gap through another opening part not provided with the metal are carried out in this order to inject the metal into the gap and thereby form the electrode.

23. (currently amended) The method for manufacturing the organic functional element according to claim 21 ~~or 22~~, ~~characterized in that~~ wherein a formation of

the electrode by the vacuum injection method into the gap or a formation of the electrode by the suction of the gas in the gap is carried out in an inert gas.

24. (currently amended) The method for manufacturing the organic functional element according to claim 23, ~~characterized in that~~ wherein the inert gas is a nitrogen, an argon, or a mixed gas of the nitrogen and the argon.

25. (currently amended) The method for manufacturing the organic functional element according to ~~any one of claims 20 to 24~~ claim 20, ~~characterized in including~~ which includes the base material having the concave part with the opening part sealed by cooling and hardening a molten metal.

26. (currently amended) The method for manufacturing the organic functional element according to ~~any one of claims 19 to 25~~ claim 19, ~~characterized in that~~ wherein the electrode is formed in a predetermined form depending on a shape of the concave part and a gap.

27. (currently amended) The method for manufacturing the organic functional element according to claim 26, ~~characterized in that~~ wherein the concave part and the gap have a plurality of striped shapes.

28. (currently amended) The method for manufacturing the organic functional element according to ~~any one of claims 19 to 27~~ claim 19, ~~characterized in that~~ wherein the base material having the concave part is made of one kind of member selected from a group composed of a glass, a metal, a ceramics and a resin, or a composite material of two or more thereof.

29. (currently amended) An organic EL element having the electrode of ~~any one of claims 1 to 17~~ claim 1, ~~characterized in that~~ wherein the organic functional element is an organic EL element.

30. (currently amended) The organic EL element according to claim 29, ~~characterized in that~~ wherein the electrode is a cathode.

31. (currently amended) A method for manufacturing the organic EL element of claim 29 ~~or 30~~, ~~characterized in comprising~~ which comprises a method of forming the electrode according to ~~any one of claims 18 to 28~~ claim 18.

32. (currently amended) An organic semiconductor element having the electrode of ~~any one of claims 1 to 17~~ claim 1, ~~characterized in that~~ wherein the organic functional element is an organic semiconductor element.

33. (currently amended) A method for manufacturing the organic semiconductor element of claim 32, ~~characterized in comprising the~~ which comprises a method of forming the electrode according to ~~any one of claims 18 to 28~~ claim 18.

34. (currently amended) An organic TFT element having the electrode of ~~any one of claims 1 to 17~~ claim 1, ~~characterized in that~~ wherein the organic functional element is an organic TFT element.

35. (currently amended) A method for manufacturing the organic TFT element of claim 34, ~~characterized in comprising the~~ which comprises a method of forming the electrode according to ~~any one of claims 18 to 28~~ claim 18.